

Claim Amendments:

Claims 1-18 (Canceled)

19. (Original) A fluid flow measuring device, comprising:

a plurality of resistors disposed in a circular pattern;

a plurality of electrodes, each electrode coupled between two adjacent resistors;

a first coil of wire adapted to generate a magnetic field wound proximate the resistors and electrodes;

a second coil of wire adapted to generate a magnetic field wound proximate the resistors and electrodes; and

a voltage measuring mechanism electrically coupled between two of the resistors,

wherein a flow of conductive fluid is detectable by measuring the voltage.

20. (Original) The fluid flow measuring device according to Claim 19, further comprising a ferromagnetic material disposed between the two coils.

21. (Original) The fluid flow measuring device according to Claim 19, wherein at least the resistors and electrodes are mounted on a sensor loop, the sensor loop being spring-loaded and being adapted to exert outward pressure to maintain contact of the sensor loop substantially flush with a borehole interior wall.

22. (Original) The fluid flow measuring device according to Claim 19, further comprising:

means for maintaining flush contact of the sensor loop with a borehole interior wall over a range of borehole casing diameters.

Claims 23-29 (Cancelled)

30. (new) The fluid flow measuring device according to Claim 19, wherein the coils of wire comprise copper.

31. (new) The fluid flow measuring device according to Claim 19, wherein the plurality of resistors comprise values of between about 500,000 ohms and about 2,500,000 ohms.

32. (new) The fluid flow measuring device according to Claim 20, wherein the ferromagnetic material comprises an iron alloy.

33. (new) The fluid flow measuring device according to Claim 21, wherein the sensor loop comprises a body comprising fluoropolymer resin.

34. (new) The fluid flow measuring device according to Claim 21, wherein the sensor loop is spring-loaded with a stainless steel spring wire.

35. (new) The fluid flow measuring device according to Claim 21, wherein the sensor loop has a substantially oval shape.

36. (new) The fluid flow measuring device according to Claim 19, wherein at least the resistors and electrodes are mounted on a sensor loop, the sensor loop being spring-loaded to maintain contact of the sensor loop substantially flush with an interior wall of a fluid conduit.

37. (new) The fluid flow measuring device according to Claim 19, further comprising means for maintaining flush contact of the sensor loop with a fluid conduit interior wall over a range of conduit diameters.

38. (new) A fluid flow measuring device, comprising:

a series-coupled plurality of alternating electrodes and resistors, wherein the electrodes are disposed along a curved loop;

a magnetic field source, the magnetic field source oriented to generate a magnetic field between adjacent electrodes, the magnetic field substantially orthogonal to an imaginary line intersecting adjacent electrodes; and

a voltage measuring circuit electrically coupled to the plurality of alternating electrodes and resistors, the circuit coupled to measure a voltage difference between adjacent electrodes, the voltage difference representative of a radial flow of conductive fluid substantially orthogonal to both the imaginary line and the magnetic field.

39. (new) The fluid flow measuring device according to claim 38, wherein the voltage difference is proportional to a velocity of the radial flow of conductive fluid.

40. (new) The fluid flow measuring device according to claim 38, wherein the magnetic field source comprises a first coil of wire wound proximate the electrodes.

41. (new) The fluid flow measuring device according to claim 40, wherein the magnetic field source further comprises a second coil of wire wound proximate the electrodes and offset from the first coil of wire.

42. (new) The fluid flow measuring device according to claim 41, wherein the magnetic field source further comprises a ferromagnetic material disposed between the first coil of wire and the second coil of wire.

43. (new) The fluid flow measuring device according to claim 38, wherein the curved loop has a substantially oval shape.

44. (new) The fluid flow measuring device according to claim 38, wherein the curved loop is a closed loop.

45. (new) The fluid flow measuring device according to claim 38, wherein adjacent electrodes are spaced about 0.3 inches or less from each other.

46. (new) The fluid flow measuring device according to claim 38, wherein the electrodes are mounted on a sensor loop, the sensor loop comprising a force loop exerting outwardly directed radial force.

47. (new) The fluid flow measuring device according to claim 38, wherein the resistors comprise values of between about 500,000 ohms and about 2,500,000 ohms.

48. (new) A method of manufacturing a fluid flow measuring device, the method comprising:
disposing a plurality of electrodes spaced apart on a sensor loop;
disposing a plurality of resistors on the sensor loop;
electrically coupling the electrodes and resistors in alternating series;

disposing a magnetic field source on the sensor loop proximate the electrodes, wherein the magnetic field source is oriented to generate a magnetic field substantially orthogonal to an imaginary line intersecting adjacent electrodes; and

electrically coupling a voltage measuring circuit to the plurality of alternating electrodes and resistors, the circuit coupled to measure a voltage difference between adjacent electrodes, the voltage difference representative of a radial flow of conductive fluid substantially orthogonal to both the imaginary line and the magnetic field.

49. (new) The method of claim 48, wherein disposing the magnetic field source further comprises:

disposing a first coil of wire on the sensor loop proximate the electrodes; and

disposing a second coil of wire on the sensor loop proximate the electrodes and offset from the first coil of wire.

50. (new) The method of claim 49, wherein disposing the magnetic field source further comprises disposing a ferromagnetic material between the first coil of wire and the second coil of wire.

51. (new) The method of claim 48, wherein the electrodes are positioned along the exterior of the sensor loop.

52. (new) The method of claim 51, wherein the electrodes are disposed on a surface of the sensor loop.

53. (new) The method of claim 48, wherein the resistors and the magnetic field source are disposed under a surface of the sensor loop.

54. (new) The method of claim 48, wherein the electrically coupling of the electrodes and resistors is performed before the disposing of the electrodes and resistors.

55. (new) The method of claim 48, wherein the electrodes are regularly spaced on the sensor loop.

56. (new) The method of claim 55, wherein adjacent electrodes are spaced about 0.3 inches or less from each other.

57. (new) The method of claim 48, further comprising disposing a force loop on the sensor loop, wherein the force loop exerts outwardly directed radial force.

58. (new) The method of claim 48, wherein the sensor loop has a substantially oval shape.